

Name: _____ ()

Class: _____

INVESTIGATE DIVISIBILITY RULES

Practice 1

Objective:

To investigate and generate divisibility rules for 2 and 8

Instructions:

In this task, you are required to:

- select and apply mathematical problem-solving techniques to recognize divisibility rules for 2 and 8.
- describe the multiples of 2 and 8 as relationships or general rules
- verify whether your divisibility rules works for other examples.

Hints:

1. List some 3-digit numbers, which are multiples of 2 or 8.
2. Investigate the numbers see if you can recognize simple pattern between these numbers.
3. You might find out more than 1 rule to test if a number is completely divided by 2 or 8.
4. Describe your rule in mathematical language (words, sentence, symbol, diagrams, tables, etc.)
5. Test your rule with other bigger numbers (say 4-digit numbers, some divisible by 2 or 8 and some do not).
6. You might use calculator to avoid careless calculation mistake.
7. Present your work neatly, tidily and logically.

Suggested Solution:

Investigate and generate divisibility rules for 2

Step 1: List some small numbers that are multiples of 2 to find the pattern of divisibility rules for 2

1-digit multiples of 2: 2, 4, 6, 8, 10

2-digits multiples of 2: 10, 12, 14, 16, 18, 20...32, 34, 36, 38, 40...

3-digits multiples of 2: 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120...

By looking at the last digit of the above numbers, they are all 0, 2, 4, 6 or 8 and all the above numbers are even numbers.

Step 2: Describe patterns and rules

From the above multiples of 2, I found out two divisibility rules for 2:

1. If a number have the last digit as 0, 2, 4, 6 or 8 it must be completely divided by 2 (without remainder).
2. If a number is an even number, it must be divisibility by 2.

Step 3: Test my rules with larger numbers (4-digits and 5-digits)

Examples: 1004, 3006, 5007, 7985, 40248, 50879

When applying my rules: 1004, 3006, 40248 are divisibility by 2 since they are all even numbers and their last digits are 4, 6, and 8.

When applying my rules: 5007, 7985, 50879 are not divisibility by 2 since they are not even numbers and their last digits are not 4, 6, and 8.

Testing: $1004 \div 2 = 502$ $3006 \div 2 = 1503$ $40248 \div 2 = 20124$

Testing: $5007 \div 2 = 2503 \text{ R } 1$ $7985 \div 2 = 3992 \text{ R } 1$ $50879 \div 2 = 25439 \text{ R } 1$

Therefore, I have verify my rules are collect since 1004, 3006 and 40248 are divisible by 2 and they all fulfill the divisibility rules of 2. Meanwhile, 5007, 7985 and 50879 are not divisible by 2 and they don't fulfill the divisibility rules of 2, their last digit are not 0, 2, 4, 6 or 8 and they are not even numbers.